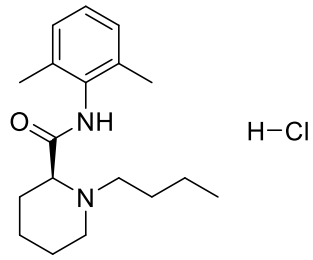
Product data sheet

MedKoo Cat#: 318096 Name: Levobupivacaine HCl CAS#: 27262-48-2 (HCl) Chemical Formula: $C_{18}H_{29}ClN_2O$ Molecular Weight: 324.893	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Levobupivacaine is a local anaesthetic drug belonging to the amino amide group. It is the S-enantiomer of bupivacaine. Compared to bupivacaine, levobupivacaine is associated with less vasodilation and has a longer duration of action

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	55.0	169.29

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.08 mL	15.39 mL	30.78 mL
5 mM	0.62 mL	3.08 mL	6.16 mL
10 mM	0.31 mL	1.54 mL	3.08 mL
50 mM	0.06 mL	0.31 mL	0.62 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Kwakye AK, Kampo S, Lv J, Ramzan MN, Richard SA, Falagán AA, Agudogo J, Atito-Narh E, Yan Q, Wen QP. Levobupivacaine inhibits proliferation and promotes apoptosis of breast cancer cells by suppressing the PI3K/Akt/mTOR signalling pathway. BMC Res Notes. 2020 Aug 17;13(1):386. doi: 10.1186/s13104-020-05191-2. PMID: 32807213; PMCID: PMC7430121.
2. Mao SH, Zhu CH, Nie Y, Yu J, Wang L. Levobupivacaine Induces Ferroptosis by miR-489-3p/SLC7A11 Signaling in Gastric Cancer. Front Pharmacol. 2021 Jun 9;12:681338. doi: 10.3389/fphar.2021.681338. PMID: 34177591; PMCID: PMC8220201.

In vivo study

1. Mao SH, Zhu CH, Nie Y, Yu J, Wang L. Levobupivacaine Induces Ferroptosis by miR-489-3p/SLC7A11 Signaling in Gastric Cancer. Front Pharmacol. 2021 Jun 9;12:681338. doi: 10.3389/fphar.2021.681338. PMID: 34177591; PMCID: PMC8220201.
2. Duman U, Yilmazlar A, Ozturk E, Aker S, Sarandol E, Yilmazlar T. Anti-inflammatory efficiency of levobupivacaine in an experimental colitis model. World J Gastroenterol. 2010 May 28;16(20):2537-41. doi: 10.3748/wjg.v16.i20.2537. PMID: 20503454; PMCID: PMC2877184.

7. Bioactivity
Biological target:
Levobupivacaine hydrochloride is a sodium channel blocker.

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In vitro activity

This study aimed to test the hypothesis that levobupivacaine has anti-tumour effects on breast cancer cells. The effects of levobupivacaine on cellular signalling and molecular response were studied with Quantitative Polymerase Chain Reaction and western blot. Induction of apoptosis was confirmed by cell viability, morphological changes showed cell shrinkage, rounding, and detachments from plates. The results of the western blot and Quantitative Polymerase Chain Reaction indicated activation of active caspase-3 and inhibition of FOXO1. The results of the flow Cytometry confirmed that levobupivacaine inhibited breast cancer cell proliferation and enhanced apoptosis of breast cancer cells. Quantitative Polymerase Chain Reaction and Western blot analysis showed increased p21 and decreased cyclin D. Quantitative Polymerase Chain Reaction and western blot analysis showed that levobupivacaine significantly increased Bax expression, accompanied by a significant decreased Bcl-2 expression and inhibition of PI3K/Akt/mTOR signalling pathway. These findings suggested that levobupivacaine inhibits proliferation and promotes breast cancer cells apoptosis in vitro.

Reference: BMC Res Notes. 2020; 13: 386. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7430121/

In vivo activity

The impact of levobupivacaine on gastric cancer cell growth was assessed in vivo. It was observed that SGC7901 cell growth was significantly inhibited by levobupivacaine in the nude mice (Figures 2A–C). Meanwhile, IHC analysis showed that the levels of SLC7A11 were repressed by levobupivacaine in the mice (Figure 2D). The lipid ROS accumulation was enhanced by levobupivacaine in the mice (Figure 2E). The data showed that levobupivacaine repressed gastric cancer cell growth in vitro and in vivo. Levobupivacaine may be applied as an anti-cancer agent in gastric cancer, especially in the combination treatment with other anti-cancer drugs.

Reference: World J Gastroenterol. 2010 May 28; 16(20): 2537–2541. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2877184/